



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/678,305   | 10/06/2003  | Joseph Scott Digangi | 4345-35             | 4161             |
| 23117  | 7590        | 06/23/2006           | EXAMINER            |                  |
| NIXON & VANDERHYE, PC<br>901 NORTH GLEBE ROAD, 11TH FLOOR<br>ARLINGTON, VA 22203 |             |                      | TO, TOAN C          |                  |
|  |             | ART UNIT             | PAPER NUMBER        | 3616             |

DATE MAILED: 06/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                  |
|------------------------------|------------------------|------------------|
| <b>Office Action Summary</b> | Application No.        | Applicant(s)     |
|                              | 10/678,305             | DIGANGI ET AL.   |
|                              | Examiner<br>Toan C. To | Art Unit<br>3616 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 17 April 2006.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-18 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-17 is/are rejected.  
 7) Claim(s) 18 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 06 October 2003 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____ .  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ .   | 6) <input type="checkbox"/> Other: _____ .                                  |

***DETAILED ACTION***

***Response to Amendment***

1. The amendment filed September 22, 2005 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: "a pressure wave that travels through said pressure vessel at sonic velocity" as recited in claims 1 and 13.
2. Applicant is required to cancel the new matter in the reply to this Office Action.

***Acknowledgments***

3. Applicant's declaration of Inventor, James Michael, Rose filed on April 13, 2006 is acknowledged. The declaration has been placed in the file of record.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 10-11, 13, are rejected under 35 U.S.C. 102(e) as being anticipated by Mizuno (U.S. 6,805,376).

Mizuno discloses a gas generator comprising: a pressure vessel (4) containing a gas under a first predetermined pressure (pressure of mixture gas in chamber 2); an

initiator housing (12) secured to and closing one end of said pressure vessel (4), the initiator housing (12) having an opening at the inner end thereof closed by an initiator rupture disc (18) constructed to rupture at a second predetermined pressure (see column 4, lines 1-10) in the initiator housing (12) greater than the first predetermined pressure, the second predetermined pressure being sufficient to create a pressure wave that travels through the pressure vessel; a micro gas generator or initiator (16) disposed within the initiator housing; a manifold (24) secured to and closing the other end of said pressure vessel (4), the manifold (24) having an opening (6) at the inner end thereof closed by a manifold rupture disk (8) constructed to rupture at a third predetermined pressure greater than the first predetermined pressure (see column 4, lines 12-17; the manifold rupture disk (8) being directly exposed to the interior of the pressure vessel in the path of the pressure wave; whereby upon the firing of the micro gas generator or initiator, the gas pressure in the initiator housing (12) increases to or exceeds the second predetermined pressure to rupture the initiator rupture disk (18) and create a pressure wave that travels through the pressure vessel to impinge on the manifold rupture disk (8) to create a localized pressure at the manifold rupture disk (8) that equals or exceeds the third predetermined pressure to rupture the manifold rupture disk and allow flow of gas through the manifold (24) before the gas in the pressure vessel is significantly heated and pressurized by the gas flow from the initiator housing.

As to claim 10, Mizuno discloses a gas generator, wherein the manifold (24) is constructed to provide for radial flow (26) therefrom.

As to claim 11, Mizuno discloses a gas generator, wherein the manifold (24) is constructed to provide for radial flow (26A) therefrom.

As to claim 13, Mizuno discloses a method of generating gas for a device to be inflated or pressurized, comprising: providing a pressure vessel (4) containing a gas under a first predetermined pressure; providing an initiator housing (14) closing one end of the pressure vessel (4) and having an opening at the inner end thereof closed by an initiator rupture disk (18) constructed to rupture at a second predetermined pressure in said initiator housing (14) greater than the first predetermined pressure; providing a micro-gas generator or initiator (16) within the initiator housing (14); providing a manifold (24) closing the other end of the pressure vessel, said manifold (24) having an opening at the inner end thereof closed by a manifold rupture disk (8) constructed to rupture at a third predetermined pressure greater than the first predetermined pressure; and firing the micro-gas generator or initiator (16) to increase the gas pressure in the initiator housing (14) to a value equal to or exceeding the second predetermined pressure to rupture the initiator rupture disk (18) and create a pressure wave that travels through the pressure vessel (4) to create a localized pressure at the manifold rupture disk (8) that equals or exceeds the third predetermined pressure to rupture the manifold disk (8) and allow flow of gas through the manifold (24) before the gas in said pressure vessel is significantly heated and pressurized by the gas flow from the initiator housing.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2-5, 8-9, 12 and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno in view of Rink et al (U.S. 5,964,479)

Mizuno discloses every element of the invention as discussed above, but fail to directly disclose the claimed limitation as recited in claims 2-5, 8-9, 12 and 14-17.

With respect to claims 2-5, 12, and 14-17, Rink et al teaches a gas generator, wherein the first predetermined pressure is approximately 4,000-8,000 psi (see column 6, line 55, and column 13, line 52), and the second predetermined pressure is approximately two times higher than said first predetermined pressure (as best shown in figure 6, the initiator rupture disc 346 fails slightly before 150 ms when the pressure/second pressure in the reaction chamber is approximately 15000 psi which is approximately two time higher than the initial pressure/first pressure in the stored gas chamber); wherein the third predetermined pressure is approximately 1.8 times higher than the first predetermined pressure (see column 14, lines 45-46), wherein said gas under a first predetermined pressure is a gas mixture of argon and helium or nitrogen and helium (see column 5, lines 15-32); wherein the micro-gas generator (370) is disposed within the initiator housing (360) and is constructed to generate sufficient heat to prevent liquification of the gas in the pressure vessel upon rupture of the initiator

rupture disk (346) and the manifold rupture disk (344). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the inflator of Mizuno by using the teaching of Rink et al in order to timely and accurately rupture the initiator disc and the manifold disc of Mizuno such that improving performance of the inflator upon inflation.

As to claim 8-9, Rink et al teaches a gas generator, wherein the initiator housing (360) is welded to the pressure vessel (314); the manifold (326) is welded to the pressure vessel (314). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the inflator of Mizuno by alternatively installing the initiator and the manifold to the pressure vessel by welding as taught by Rink et al in order to provide inflation gas to inflate the airbag for protecting occupant.

#### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno and Rink et al and further in view of Starozihitsky et al (U.S. 6,364,355).

Mizuno discloses the pressure vessel but fails to disclose the material for the pressure vessel as claimed in claims 6-7.

Starozihitsky et al teaches the invention wherein the pressure vessel is formed of a lightweight light strength material; wherein the material is low carbon steel or aluminum. It would have been obvious design choice to one having ordinary skill in the art at the time the invention was made to make the pressure vessel of Sink et al by low carbon steel material as taught by Starozihitsky et al in order to ensure performance of the gas generator for protecting occupant, since it has been held to be within the general skill in of a worker in the art to select a known material on the basis of its suitability for the indented use as a matter of obvious design choice.

***Allowable Subject Matter***

10. Claim 18 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

Applicant's arguments with respect to the rejection of the claims based on Rink et al have been considered but are moot in view of the new ground(s) of rejection.

In response to applicant's argument that the amendment filed on September 22, 2005 did not introduce new matter into the disclosure, the examiner respectfully disagrees, because the examiner has found no disclosure in the specification regarding the recitation "a pressure wave that travel through the pressure vessel at sonic velocity", page 6 of the specification discloses statements "speed of sound of fill gas B" and "speed of sound of fill gas A", however, these two statements do not provide any support for the above mentioned recitation. The specification also does not disclose in

Art Unit: 3616

detail how the pressure wave travels through the pressure vessel at sonic velocity or at speed of sound.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan C. To whose telephone number is (571) 272-6677. The examiner can normally be reached on Mon-Fri (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Dickson can be reached on (571) 272-6669. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTo  
June 20, 2006

